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(54) **FLUID DELIVERY AND MEASUREMENT SYSTEMS AND METHODS**

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This patent is subject to a terminal disclaimer.

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(Continued)

(56)

References Cited

U.S. PATENT DOCUMENTS

3,494,358 A 2/1970 Duesterheft et al.

3,894,538 A 7/1975 Richter

(Continued)

FOREIGN PATENT DOCUMENTS

EP 0937475 8/1999

NL 7310455 2/1974

(Continued)

OTHER PUBLICATIONS

Office Action dated Apr. 23, 2015 with attached Examination Search Report dated Apr. 13, 2015 for Canadian Patent Application No. 2,850,798.

(Continued)

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(57)

ABSTRACT

Fluid delivery and measurement systems and methods are disclosed.

19 Claims, 12 Drawing Sheets

